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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,365	03/18/2004	Patrick Brant	2003B044/2	7914

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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/803,365	Applicant(s) BRANT, PATRICK	
	Examiner Rip A. Lee	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-16, 18-28, 30 and 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 8-14, 18-28 and 30 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 6, 15, 16 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action follows a request for continued examination (RCE) under 37 § C.F.R. 1.114, filed on August 21, 2006. Claims 1-6, 8-16, 18-28, 30 and 31 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 4, 8, 9, 10-14, 18-28, and 30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fujita *et al.* (U.S. 6,143,911).

Fujita *et al.* teaches use of ethylenebis(2,4-dimethylindenyl)HfCl₂ as a catalyst component (methylaluminoxane, MAO, as the co-catalyst) for polymerization of olefins (claim 10). The specification also lists ethylenebis(2,4-dimethylindenyl)HfCl₂ as a useful precursor for carrying out polymerization. Fujita *et al.* instructs that propylene is particularly preferred for polymerization by catalysts of the invention, and that propylene can be copolymerized with ethylene (col. 8, lines 60-65). Thus, it would have been obvious to one having ordinary skill in the art to use the catalysts disclosed in the patent to carry out copolymerization of propylene and ethylene. The reference is silent with respect to the level of ethylene incorporation by the catalyst during copolymerization of propylene and ethylene, and it is silent with regard to the properties of a copolymer derived from such a process. However, in view of the fact that the process taught in Fujita *et al.* essentially the same as that recited in the instant claims (polymerizing propylene and comonomer in the presence of catalyst containing essentially the same metallocene as that recited), a reasonable basis exists to believe that the corresponding product produced by the process of the prior art exhibits essentially the same properties. Since the PTO can not conduct experiments, the burden of proof is shifted to the Applicants to establish an unobviousness difference. *In re Fitzgerald*, 619 F.2d. 67, 205 USPQ 594 (CCPA 1980). See MPEP § 2112-2112.02.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Winter *et al.* (U.S. 5,304,614) for the same reasons set forth in the previous office action.

Briefly, Winter *et al.* discloses a process of polymerization of olefin in the presence of a catalyst comprising transition metal complexes *rac*-Et(4,7-Me₂-Ind)ZrCl₂, *rac*-Et(2,4,7-Me₃-Ind)ZrCl₂, and *rac*-1,2-butanediyl(4,7-Me₂-Ind)ZrCl₂ (claim 4 and examples). According to the inventors, catalysts of the invention are used for polymerization or copolymerization processes, and in particular, propylene and ethylene are polymerized (col. 7, line 23). Example 19 shows that the copolymerization of propylene and ethylene is clearly within the scope of the claims of the patent.

The examples show use of the compounds listed above in a process for polymerization of polypropylene, but there are no examples in which the same compounds are used in a process for copolymerization of propylene and ethylene. Despite this, one of ordinary skill in the art would have found it obvious to use the compounds in a copolymerization process because Winter *et al.* teaches that compounds of the invention are used for this exact purpose. Regarding the molecular weight, it would have been obvious to one having ordinary skill in the art to manipulate reaction conditions in order to arrive at the desired molecular weight range, and the examples show that it is quite possible to obtain polymer having M_w greater than 20,000. Moreover, it has been held that the discovery of optimum values of result-effective variables in a known process is within the level of ordinary skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). With regard to the property “ratio of g’s,” one of ordinary skill in the art would have found it obvious to expect the resulting polymers to exhibit such a property, in light of the fact that the process of using the compounds of Winter *et al.* in a process of copolymerization of propylene and ethylene is essentially the same as the process recited in the instant claims. Furthermore, one of ordinary skill in the art would have expected polymers to exhibit the claimed feature since catalysts of the invention appear to produce polymers that have higher molecular weight with upon incorporation of comonomer.[†] Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

[†] In Example 1, propylene is homopolymerized in the presence of a catalyst comprising $\text{Me}_2\text{Si}(4,7\text{-Me}_2\text{Ind})_2\text{ZrCl}_2$. The M_w of the resulting polymer is 12,500. In example 19, the experiment was repeated except ethylene was metered in during the polymerization. The resulting propylene-ethylene copolymer has M_w of 15,600. Thus, incorporation of comonomer appears to result in polymer having higher molecular weight.

Allowable Subject Matter

6. Claims 2, 3, 5, 6, 15, 16, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. In the final office action, dated May 19, 2006, the subject matter of claim 14 was indicated as allowable if rewritten in independent form. The claim as written in the amendment of March 22, 2006 is identical to that originally filed on March 18, 2004. The claim read:

“The process of claim 11 wherein R^{14} , R^{15} and R^{16} are identical and are a C_1 - C_4 alkyl group.”

Here, substituents R^{14} and R^{15} are *necessarily* present such that the minimal structure of the bridging group has the form $-M^2(R^{14})(R^{15})-$, where $m = n = 0$. In terms of real embodiments, this would represent an minimal bridging group of isopropylidene, $-CMe_2-$. Such a claim would exclude complexes containing a bridging ethylidene group, $-CH_2CH_2-$, as shown in Winter *et al.*

New claim 30 was submitted in response to indication of allowable subject matter, and this was to incorporate the subject matter of claim 14. However, claim 30, states:

“wherein R^{14} , R^{15} and R^{16} , when present, are identical and are a C_1 - C_4 alkyl group.”

Here, substituents R^{14} and R^{15} are optional such that bridging group R^8 now includes an ethylidene group. As such, the rejection of this claim over Winter *et al.* remains in force.

8. The rejection of claims 1-6, 8-13, 15, 16, and 18-28 over Winter *et al.*, set forth in the previous office action, has been withdrawn. The rejection no longer applies in view of amended claims.

Art Unit: 1713

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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October 25, 2006



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